

Comment No. Word	NJDEP	Location	Text Highlighted	Comment	Response
1	—	[General Comment]	—	The Pre-Final Design Report may underestimate the potential for sediment and associated contaminants (including colloidal and dissolved forms – these have not been addressed in the report) to be dispersed from the project area. To address this concern, a comprehensive surface water quality monitoring program should be implemented; the scope of this program should be developed by the USEPA, NJDEP and the CPG. Suggestions are provided below in response to Sections 2 and 4.	As there has been no free product identified within the sediment and previous monitoring studies did not identify any significant dissolved COPCs, dissolved and colloidal phases of contaminants are not expected. The design document will be revised to include text indicating as such. An appropriate water quality monitoring program (WQMP) will be developed, submitted for review and approval, and then implemented .
2	—	Appendices C, E, G, I, J	Appendixes	Appendix C, design drawings, and Appendix J, Construction QA, no comments were provided and defer to subaqueous cap design engineers within either USEPA or USACE for the information in these documents. Appendices E, G and I: These appendices were not provided to the NJDEP for review and were not posted to the sharepoint website for the NJDEP's review.	Noted concerning Appendix C, design drawings, Appendix J and Construction QA. Appendix E Construction Environmental Monitoring QAPP Addendum was still in progress and not included in the 11-30-12 Pre-Final version. Appendix G Community HSP was also in development so only an outline was provided. Appendix I Cap Design Field Work and Treatability QAPP Addendum – This was provided in December 2012. CPG rec'd comments from NJDEP on this document in a separate communication. The Final Design will include Appendices E, G and I.
3	3	Appendix A	Appendix A: RM 10.9 Concentration Data and Figures for 2,3,7,8-TCDD, Mercury, and Total PCBs at Select Depth Intervals	Figure A-2c requires revision, as the 2,3,7,8-TCDD concentrations are incorrect. Review and verification of other similar figures is recommended. Based on detailed core data maps provided it appears that zones of higher concentrations (in instances orders of magnitude) appear in the upper northeastern 1/3 of the proposed remediation area. Specifically Cores 2011 RM 10.9 – 0326; 0340; 0331; 0323; 0335; 0334 show the highest concentrations in TCDD's, Mercury & PCB's. This being the case, it may be beneficial to target said areas with more rigorous controls while dredging these locations. Such controls could include use of state-of the art siltation curtains to remain in place longer (specified) periods after dredging is done; removal of curtains during slack tides; and /or employment of coffer boxes to sequester and reduce contaminant mobility resulting from dredging these target areas.	Figure A-2c will be corrected. A comprehensive daily brief detailing work conditions for the day will be conducted and include, but not be limited to anticipated sediment conditions, tides, river flow and weather conditions. The proposed BMP will provide sufficient controls for minimizing potential impacts to water quality. Based on the resuspension modeling results, the use of silt curtains are considered an effective resuspension control approach for the project. Cofferdams are used to dewater an area for construction and would require equipment and sediment to be transported across the Riverside Park. The use of cofferdams would also impact schedule due to the mobilization/ demobilization of additional heavy equipment. For all these reasons, cofferdams are not being considered for resuspension control on this project.

4	9	Figure 4-8, Water Quality Monitoring Locations	4-8 Water Quality Monitoring Locations	Neither the text nor this figure describe the basis for the proposed water quality monitoring locations, therefore, this information needs to be provided. Given the tidal river conditions, a minimum of 2 pairs of equidistant upstream and downstream monitoring locations are recommended. It is unclear why the far-field downstream station in Figure 4-8 is almost 3x's the distance from the project's analogous upstream station. Table 4-6 seems to indicate the locations are equidistant. These pairs should be the same distance from the project, unless technical justification otherwise is provided. In addition, this section, or the forthcoming Appendix E (Construction Environmental Monitoring Program) should identify Data Quality Objectives for the monitoring program (including minimum detection limits for all COPCs) which should describe how the goals in Section 2 (ARARs) are to be met by using the tools in Sections 4.4.2 (DREDGE model) and 4.6.1.3 (Monitoring).	Near field monitoring locations are proposed both upstream and downstream of the removal area (Buoys #2 & 3). The far field locations were selected based on bridge locations. These locations are anticipated to be equidistant from the removal area and the figure will be revised accordingly. The DQO will be identified in the WQMP.
5	1	Section 1.1, page 1-1 and Figure 1-2	Project Description	Related to the bathymetry comment above, the effects of Hurricane Sandy on bathymetry in the Removal Area., and thus potentially on the scope of the Removal Action, should be evaluated prior to the implementation of the Removal Action.	A pre-construction bathymetric survey will be performed by the dredging contractor prior to beginning dredging.
6	2	Section 2.1, paragraph #6, page 2-2	The relevant water quality criteria for the contaminants of concern are referenced in Table 2-4. General technical policies and numerical limits have been established under NJAC 7:9B. One of these policies is using USEPA Method 1631 to test for mercury. The NJDEP has the authority to set nutrient limits and require best available technologies. Mixing zones are allowed; rules on mixing zone distances are set forth, as well as methods to determine in-stream concentrations within mixing zones.	The size of the mixing zone (and thus the locations of the up-stream and downstream surface water quality monitoring locations) should be consistent with the requirements in N.J.A.C. 7:9B (see Table 2-4). Please verify that this is the case and describe how this was determined. Although this project is not a formal NJPDES discharge point, the proposed operation on the whole, is similar to one. In this case, re-suspension within a certain distance from the dredge operations (these could be predicted via the DREDGE model, Section 4.4.2 and/or other predictive methods using site-specific information) is expected. The site specific trigger and action levels (Section 4.6.1.3) for addressing sediment re-suspension conditions should be applied outside the designated mixing/impact zone.	The requirements of N.J.A.C. 7:9B are not considered relevant as they apply to NPDES discharge points. The size of the mixing zone will be based on the outputs of the DREDGE model which can be used to determine the dredging operations area of influence. The proposed resuspension monitoring points are based on the DREDGE Model results which assume a 1% resuspension rate under normal river flow conditions (1,200 cfm) and no environmental controls (i.e., silt curtains). The model provides an estimation of TSS concentration at various distances from the dredging operations. The TSS concentrations are based on a background concentration of 0 mg/L The DREDGE Model is used to simulate the size and extent of the resulting suspended sediment plume caused by the dredging operations. Based on the DREDGE Model outputs the weighted average TSS concentration 200 m downstream of the dredging operations would be 21 mg/L and this concentration drops off significantly at 400 m (7.7 mg/L). Therefore, the "dredging area of influence" is considered between 200 and 400 m. As a result 300 m was selected as the distance for the near field monitoring locations.

7	4a	Section 4.2, Estimated Volume of Dredged Material, sediment, page 4-1	Estimated Volume of Dredged Material	This section states that sediment north of Station 31+00 will be dredged to native material because of the steep slope that may not sustain a cap. This is appropriate, however, clarification is needed for: what is meant by “native material” (free of all manmade contaminants, or a certain level of residual contamination?), the anticipated dredge depth, and how this either has been or will be determined.	“Native material” designation is based on geotechnical observations of sample cores. Based on the boring logs this material had the following properties: <i>Native silty CLAY, (5YR 4/2) dark reddish gray, medium plasticity , medium stiff to stiff, wet.</i>
	4b	Section 4.2, Estimated Volume of Dredged Material, sediment, page 4-1	Estimated Volume of Dredged Material	In addition, sediment data reveal that at the approximate depth of 2 feet into the sediment bed, certain cores reveal significantly elevated 2,3,7,8-TCDD (> 15,000 ppt). Special consideration needs to be given to these areas with regard to either dredging deeper to remove excess concentrations at the cut line, or using special provisions for capping. These locations include: 310, 314, 316, 318, 322, 333, 338, 339, 340, 343, 344, 346, 350 and 351. Comparing Figures 4-2 (existing conditions) and Figure A-1 (Sample locations) indicates that all of these cores are south of Station 31+00. Therefore, additional provisions for addressing excess contamination at the cap interface is needed, particularly in regions of higher shear stress. This condition requires special attention both during dredging/capping operations and for long-term cap maintenance.	In accordance with the RM 10.9 Removal Action, the removal and capping are being undertaken to “to reduce exposure of receptors to, and prevent potentially significant migration of contaminants from [the removal area]”. To meet the objectives of the Removal Action, the CPG has developed a design which will remove approximately 2 feet of sediment from the Removal Area and then cap this area with an active layer designed and engineered to prevent breakthrough of COPCs to the bio-active zone. In addition, the proposed pore water sampling program (QAPP D) supports the cap design and is biased towards these higher concentration areas.
8	5	Section 4.4.1, page 4-5	Relevant Site Conditions and Impact on Resuspension Risks	This section lists three factors that “are favorable for minimal sediment [and contaminant] resuspension ...” This is good information, however, there are also limitations to the applicability of these factors that could result in increased sediment and contaminant resuspension . These include: a maximum river flow condition (needs to be specified) above which dredging operations will cease; the shallow water in the project area which may result in increased disturbance and resuspension of sediment due to the movement of the dredge barges and workboats; and, although the sediment to be dredged does not contain free product, dissolved and colloidal phases of contaminants may also be released into the water column during the dredging operation.	<p>A maximum river flow condition will be specified in the Final Design and will be based on the effective use of a silt curtain system.</p> <p>Movement of the dredge, barges and work boat is anticipated to be minimal and the proposed BMPs are considered appropriate to control potential resuspension.</p> <p>The hydrophobic nature of the organic COPCs reduces the potential for the release of dissolved and colloidal phases of contaminants into the water column. In addition, no free product has been identified within the sediment.</p>

9	6	Section 4.4.2 DREDGE Model, page 4-5 and Table 4-3	DREDGE Model	<p>The DREDGE Model input parameters assumes dredged material loss rates of only 0.5% and 1%. Under “typical” maintenance dredging operations up to 5-10% of the sediment to be dredged may be resuspended. In addition, the proposed factors differ substantially from sediment loss rates of 6% recently suggested by the CPG for the 8-Mile FFS project (CAG meeting Dec. 6, 2012, Newark, NJ) and 3%, used by the USEPA for the same project. In addition, through evaluation of the 2005 Passaic River Dredging Pilot Study, researchers estimated that approximately 0.8 to 2.2 % of total sediment mass dredged may be released to the water column (Chant, 2007). Thus, it does not seem appropriate to use only 0.5 and 1% resuspension values in the DREDGE Model analyses, even though an environmental clamshell bucket will be used and the water column is shallow. These two factors may be counter-balanced by increased disturbance and resuspension of sediment due to the movement of the dredge barges and workboats in such shallow water. For these reasons, the currently proposed sediment loss input parameters for this project require further technical justification. At a minimum, the proposed factors should be modified upwards to be in line with the aforementioned Dredge Pilot findings.</p>	<p>It is not appropriate to compare maintenance dredging operations with environmental dredging operations. Nor is it appropriate to compare the RM 10.9 Removal Action to the 8-Mile FFS which has assumed production rates of up to 3,321 yd³/day. The assumed dredge material loss rates (0.5 to 1% of total mass removed) are based on the USACE’s Technical Guidelines for Environmental Dredging of Contaminated Sediments (Sept 2008) which indicates “the conservative characteristic resuspension factor for mechanical dredges with environmental buckets without overflow is about 0.5 percent [of the fine silt and clay fraction].”</p> <p>The work will be conducted from deeper to shallower water so that the marine vessels will always have sufficient draft. The Contractors will also be restricted to 60% of full throttle when working in or adjacent to the removal area in order to minimize potential resuspension.</p>
	7	Section 4.4.2 DREDGE Model, page 4-5 and Table 4-3	DREDGE Model	<p>The DREDGE Model also uses a 1-year maximum flow of 6,000 ft³/sec and 0.5 m/sec. Will the Final Design include a BMP limiting dredging operations to flows below these values?</p>	<p>Operations will cease when the river flow exceeds the recommended velocity for the effective use of a silt curtain system (approximately 1.7 to 2.5 ft/sec; note 1.7 fps is equivalent to 6000 cfm) unless it can be shown via monitoring that project water quality goals can be maintained without use of the silt curtain system.</p>
10	13	Section 4.4.3	Proposed Resuspension Control Approach	<p>The BMPs listed in Section 4.4.3 are those that will be implemented as standard operating procedures. Additional BMPs are needed if the “trigger levels” are exceeded. Periodic water quality monitoring for key COPCs (total and dissolved fractions) should be implemented on a daily basis, with an exceedance of the turbidity “trigger level” resulting in additional monitoring for these COPCs.</p>	<p>When water quality monitoring detects turbidity at or above the trigger level specified in the WQMP, the BMPs of the dredging/capping operations will be evaluated in order to determine the potential cause of the exceedance. Dredging operations will continue during this investigation. If the SWQM data indicates that the Action level specified has been exceeded, the dredging activities will be immediately suspended and the cause of the event and appropriate corrective measures will be investigated.</p> <p>Management measures to mitigate the exceedance may include modifying the dredging equipment and operations, including bucket and cycle time; additional river quality monitoring, modifying and/or installing additional silt curtains; modifying and/or installing additional absorbent boom; and modifying or suspending activities until river water quality is restored to below trigger values.</p> <p>COPC sampling data cannot be collected and analysed in a timeframe that will allow real-time management of dredging operations. Monitoring of COPCs will be conducted as a continuation of the baseline monitoring program. However, should an exceedance of the Action Level occur, additional water column sampling will be conducted outside the area of influence.</p>

11	8	Section 4.4.4, page 4-7 and Figure 4-7	Silt Curtains	The Final Design Report should include a more detailed figure showing the installation and operation of the silt curtain. In addition, operational parameters for removing and reinstalling the silt curtain as the dredge barge and associated work boats moves must be established – for example, a maximum suspended sediment level inside the silt curtain should be established, above which the curtain will not be removed. This is needed to prevent the suspended sediment contained by the silt curtain from being dispersed into the river, thus significantly reducing its effectiveness. In addition, as noted in Section 4.4.4.1, the silt curtain must be designed and operated to “provide sufficient residence time to allow the larger sediment particles to settle out of suspension ...”	A technical specification for silt curtains will be included with the Final Design. The means and methods to be employed for the installation of the silt curtain systems will be provided within the dredging subcontractor’s Dredge and Operation Plan.
12	10	Section 4.6.1.1, page 4-9, Figure 4-8, and Table 4-6	Baseline Turbidity and TSS Monitoring	See Comment #2 to determine the locations of the surface water quality monitoring locations. Please provide the rationale for the assumption that the “dredging area of influence” (i.e. the mixing zone?) is 1,000 feet (300 meters) up- and downstream from the dredging area.	The DREDGE Model is used to simulate the size and extent of the resulting suspended sediment plume caused by dredging. Based on the DREDGE Model outputs the weighted average TSS concentration 200 m down or upstream (depending on tidal flows) of the dredging operations would be 21 mg/L and this concentration drops off significantly at 400 m (7.7 mg/L). Therefore, the “dredging area of influence” is considered between 200 and 400 m up or downstream of the river flow. As a result 300 m was selected as the distance for the near field monitoring locations.
13	11a	Section 4.6.1.2, Initial Dredging Monitoring	Initial Dredging Monitoring	The overall framework for the Turbidity and TSS sampling for both the Baseline and Initial Dredging Monitoring is considered appropriate. To the extent possible, the baseline sampling for TSS should be conducted under a variety of flows and tidal stages.	Baseline monitoring will be conducted at least 30 days prior to beginning dredging operations and will cover all flows and tidal stages for that period. The extensive water column monitoring data collected from RM 10.2 in 2009/2010 will also be utilized in establishing baseline conditions.
	11b	Section 4.6.1.2, Initial Dredging Monitoring	Initial Dredging Monitoring	To strengthen the data collected, the initial turbidity-TSS correlation should be established during the baseline monitoring (Section 4.6.1.1), confirmed during the first 24-48 hours of dredging, and then on a weekly basis thereafter (or whenever it appears that dredging has resulted in a large increase in suspended sediment levels). Verifying the turbidity-TSS correlation should not be limited to the first 48 hours of monitoring during dredging operations. c. In addition, sampling and analysis of key project COPCs (2,3,7,8-TCDD, total PCBs and Hg) is needed during these programs to additionally correlate water chemistry to TSS and Turbidity measurements. This is necessary to assist with evaluation/documentation of surface water quality ARAR attainment and to provide, if possible, Turbidity-TSS-COPC chemistry guidelines for feedback to project operations.	The initial turbidity-TSS correlation will be established based on the water column monitoring data collected from RM 10.2 in 2009/2010. This correlation will be refined during the baseline monitoring and updated as required during the initial dredging operations. Once established, TSS samples will be collected on a daily basis and when an exceedance of the turbidity trigger values has occurred. As with the TSS/turbidity correlation the 2009/2010 data collected from RM 10.2 will be used. COPC sampling will also be incorporated into the Baseline monitoring program and the results utilized to refine any correlations between COPCs and turbidity/TSS. The locations and frequency of the COPC sampling are being developed.
14	14a	Section 4.6.1.3, Resuspension Monitoring	Monitoring	In addition, the proposed application of the trigger and action levels needs to be re-evaluated because, as currently proposed, the trigger level is applied to buoy #2, upstream 1,000 ft., whereas, the action level is applied at buoy #3, downstream 1,000 ft. Instead, both the trigger and action levels should be applied at all stations (fixed or mobile), but at a minimum, the closest station downstream of dredging.	The trigger and action levels will be determined at all the monitoring locations and the text will be revised accordingly.

14b	Section 4.6.1.3, Resuspension Monitoring	Monitoring	Bullet 3 indicates that chemical monitoring for 2,3,7,8-TCDD, total PCBs and Mercury will only be conducted when dredging has been suspended, which doesn't occur until the action level has been exceeded for a minimum of 1 hour. Chemistry sampling is stated to occur at the buoy location where the "trigger" level was exceeded (this would mean buoy #2, upstream?). First, this is considered too late in the program. Second, this section is confusing and should be re-written to clarify that chemical water quality monitoring for COPCs will occur when Turbidity trigger levels are exceeded, at the approximate timeframe and location of the observed exceedences.	COPC water quality data cannot be measured in real-time and therefore will not be used to monitoring the dredging operations. The basis of the trigger and action levels will be turbidity/TSS which can be collected and measured on a real-time basis and allow for timely corrective action. COPC water quality monitoring will be conducted as an extension of the Baseline monitoring program and will be sampled/analyzed based on the frequency associated with this program. Chemical water quality monitoring will also be conducted when the turbidity/TSS Action Level is exceeded. The sampling will be taken at the approximate location of the observed exceedance.
14c	Section 4.6.1.3, Resuspension Monitoring	Monitoring	Text states that in addition to real time measurements of turbidity, field measurements of turbidity, TSS will be done at buoys 2 and 3 "and at three locations transect including west, center and east channel". Please clarify: does this mean three transects of west, center and east channel locations, or just one transect of same? Three transects are recommended, as one upstream, and two downstream. Improved description is needed on the location of these transect(s) in relation to the active dredging, and how they are selected. It is anticipated that the above issues (comments 4 – 14) can be addressed in the forthcoming Appendix E, Construction Environmental Monitoring QAPP Addendum, not yet provided for agency review.	Three transects and the location of these transects for monitoring TSS and turbidity will be considered in the development of the Construction Environmental Monitoring QAPP. As the river flow during all dredging operations cannot be considered turbulent, any potential plumes will not flow across the river.
15	Section 4.6.1.3, Resuspension Monitoring	Monitoring	The monitoring program should also include an "adaptive management" component to respond to the observed data and modify the program as needed. A flowchart/decision tree is recommended. The monitoring program serves to guide careful management of the dredging operations and to document overall project success towards attaining ARARs. These two goals should be included and clarified in Section 4 and Appendix E.	An appropriate decision management tool (e.g., flowchart/decision tree) to assess the TSS/turbidity water quality monitoring data associated with dredging/capping operations will be included in the Final Design document. It will be made clearer in Section 4 that a WQMP will be developed and utilized for the management of dredging operations and the goal of attaining ARARs.
16	Section 4.6.1.3, Resuspension Monitoring	Monitoring	Surface water quality monitoring is also addressed in Appendix D (Section 01 45 16); this appendix should ultimately be revised to be consistent with the Final Design Workplan and Report.	The documents will be revised to be consistent.

15	12	Section 4.6.1.3, Resuspension Monitoring	Resuspension Monitoring	<p>The technical basis for the selected Turbidity trigger of 35 NTU and action level of 70 NTU needs to be provided in this section, or appropriately referenced. The turbidity “trigger levels” cannot be firmly established until the turbidity-TSS correlation has been developed. These levels must be set to minimize potential impacts to surface water quality outside of the mixing zone. Further, a relationship between turbidity/TSS and the concentration of the COPCs must be established to determine if the surface water quality criteria for the COPCs are being met when turbidity/TSS monitoring alone is conducted (otherwise, monitoring for turbidity alone is of limited value).</p>	<p>Recent TSS/turbidity data was collected as part of the LPRSA RI/FS during the water column monitoring deployments at RM 10.2 in 2009 and 2010, which is within 0.5 miles of the removal area. The Average TSS concentration was 28.9 mg/L with a Std Dev of 28.7 mg/l and the Average turbidity was 19.8 NTU with a Std Dev of 15.5 NTU</p> <p>Background data suggest that the TSS concentration is ~1.5 x turbidity</p> <p>Please note CPG’s response to NJDEP Comment 5. N.J.A.C. 7:9B establishes the SW Criteria for FW2-NT as 40 mg/L for TSS and 15 NTU (30 day avg) and 50 NTU one time Max for turbidity. The 2009 and 2010 PWCM data indicate that background conditions for turbidity already exceed these standards. Therefore, for the RM 10.9 project the trigger/action levels need to be based on background + xx NTU/TSS</p> <p>As noted, chemical data cannot be measured in real time therefore, TSS/turbidity data will be used to monitor dredging operations. However, recent CWCM water quality data from RM 10.2 will be used to attempt to establish a relationship between turbidity/TSS and COPC. Data collected during the removal action will be used to update this relationship.</p>
16	17	Section 4.6.1.4, page 4-12	Spill Response Plan	<p>Please clarify the location of the “sediment stockpiling area” referred to in this section.</p>	<p>This text has been deleted from the report as no “sediment stockpiling area” is to be used.</p>
17	19	Section 4.6.3, Noise	Noise	<p>This section seems appropriate as currently described, however CPG needs to verify/coordinate with the appropriate Lyndhurst authorities on the goals/actions described.</p>	<p>Noted. The CPG intends to coordinate with the appropriate authorities with respect to noise related goals/objectives.</p>
18	18	Section 6.2.4, page 6-3	Stabilization	<p>Bench-scale testing will be required to verify that stabilizing the dredged material with Portland cement will not result in air quality emissions exceeding those in the processing facility’s permits. In addition, such testing may be required by the operator of the ultimate disposal facility for the processed dredged material to verify it is physically suitable and environmentally acceptable for disposal at that facility.</p>	<p>Bench scale stabilization testing will be conducted by both potential stabilization facilities with newly collected sediment from RM 10.9 in order to: 1) determine the appropriate percent (by weight) portland cement addition required and 2) determine the TCLP results of the stabilized sediment. This information will be provided to the disposal facilities.</p>
19	20	Section 7.1 – Design Criteria	to chemically isolate and sequester the transport of dissolved constituents	<p>First paragraph, second sentence, add the term “physically” to the phrase “to chemically isolate...” and add “particulates and ” to the phrase “dissolved constituents” . In addition, cap design should include/consider an upper bound condition of a 500 year flood, as already suggested by USEPA.</p>	<p>The second sentence will be revised as noted. The impact of designing for a 500-year flood was considered in Section 7.2.2.1.</p>

20	21	Section 7.1, page 7-1, Key Design Criteria, 6th bullet regarding pore water	Design COPC pore water concentrations based on the lesser of either (1) sediment-pore water partitioning calculations using the maximum RM 10.9 Removal Area post-dredge sediment concentrations or solubility limits or (2) pore water concentrations from RM 10.9 sediment and/or pore water samples are to be collected and analyzed in late 2012/early 2013.	This bullet describes several methods that may be used to determine current sediment pore water concentrations of key COPCs. To be conservative, this should be revised to read "...based on the greater of either ...".	We do not believe it is necessary to modify the text as suggested. As noted in Section 7.2.1.2, "Studies have shown that estimated pore water concentrations using the EqP method can overestimate freely dissolved aqueous concentrations by several orders of magnitude (Hawthorne et al., 2006, 2007; McDonough et al., 2010)." Site-specific data will be obtained; the cap design will be appropriately conservative without having to rely on excessively conservative theoretical pore water concentrations.
21	22	Section 7.2.1, page 7-2	Chemical Containment	It is noted that additional studies are underway and proposed for the near future to obtain data needed to finalize the design of the cap. The Department may make additional comments on the proposed cap after its design has been finalized.	Comment noted.
22	23	Section 7.2.2.1, paragraph #2, page 7-7 and Table 7-2	Table 7-2 summarizes results of armor size calculations for the 100-year return period flow and presents the maximum calculated required armor size for the areas within the removal area downstream of Station 31+00 defined by the given bottom elevation ranges. Based on these results, it is recommended that an armor layer with a D ₅₀ of 4.5 in. (Armor Stone Type A) be specified in areas deeper than the -3.0 ft bottom surface contour and an armor layer with a D ₅₀ of 2 in. (Armor Stone Type B) be specified in areas shallower than the -3.0 ft contour.	It is recommended that in depths deeper than -3.0 feet, the armor stone have a D ₅₀ of 4.5 inches; at depths shallower than -3.0 feet, the D ₅₀ should be 2 inches. However, the data in Table 7-2 suggest that, to be conservative these D ₅₀ values should be larger. Re-evaluation/clarification of this issue is needed.	Table 7-2 has been revised to reflect the most recent design calculations. The table is now consistent with the armor stone sizes.
23	24	Section 7.2.3, Layers	Physical Separation and Stabilization Layers	Please provide the approximate thickness of the "reactive core mat" and its expected, reliable-use timeframe.	Based on current modeling, multiple reactive core mats would have to be used to provide a sufficiently thick active layer. Multiple reactive core mats are not an economical alternative for this situation and are not being considered for implementation at this time.
24	25	Section 7.2.4, page 7-9	Design Cap Plan and Sections	The area between STA 31+00 and STA 37+50 will not be capped, but will be dredged to the depth of native material. Unless backfilled, this will leave a depression (of unknown depth) in the river bottom directly north/upstream of the capped area. Given the hydrodynamics in the Removal Area, could this result in currents and erosive forces adversely impacting the cap? If so, this concern needs to be addressed.	The depth to native material in areas upriver of Station 32+00 ranges from 0.65 ft to 2.6 ft below the existing surface. These depths are not anticipated to result in currents or erosive forces which could adversely impact the cap. The transition from the dredged area to cap at 31+00 will be backfilled with Armor Stone Type A.
25	26	Section 7.3, paragraph #2, page 7-9	less than -3 ft will have a D ₅₀ of 4.5 in.	Revise to read "... less than -3 ft will have a D ₅₀ of 2 in. The armor ... greater than -3 ft will have a D ₅₀ of 4.5 in. But also see Comment #23.	The sentence was revised as noted.

26	28	Section 7.6.1 Placement Thickness Criteria	Placement Thickness Criteria	Based on this section, please clarify if total cap thickness is slated to be 1 ft., 1.5 ft. or 2 ft.? As currently stated, it appears to be approximately 1 ft. thick. Will there be different thicknesses depending on location in the removal area to address more severe conditions (higher contaminant levels at cap interface, higher shear stresses)?	The minimum and average thicknesses for each of the cap layers are detailed in Section 7.6.1. The average cap thickness will be 22 inches. Armor Stone Type A layer, which is designed to resist higher shear stresses, uses larger stone and has a larger design thickness than the Type B layer. The active layer is a consistent thickness throughout the cap and was conservatively designed based on the highest contaminant levels in the underlying sediment such that there is zero breakthrough for hundreds of years.
27	27	Section 7.6.1, page 7-10	Placement Thickness Criteria	Although the intention is to place an average Armor Stone Type B layer 12 inches thick, the minimum thickness criteria is only 4.5 inches (based on Palermo et al., 1998; Section 7.2.2.1). This is a very large difference between the target average and acceptable minimum thicknesses. Therefore, it is recommended that the Armor Stone Type B layer thickness minimum criteria be increased. This would also be more consistent with the placement tolerance and accuracy requirements specified in Section 7.6.2.	The minimum thickness has been set as the design thickness. The design thickness of Armor Stone Type B is 4.5 in., which includes a 50% increase in thickness for underwater placement. The average Armor Stone Type B thickness of 12 inches is conservative considering the design thickness and was set at 12 inches for ease of construction. The use of a conservative average thickness is not a justification for increasing the design (or minimum) thickness.
28	29	Section 7.8.1, paragraph #3, page 7-12	The water quality monitoring requirements established for the dredging operations will also be followed during the capping activities. As with dredging, BMPs and control measures will be used during cap placement to further minimize any increased turbidity.	The specific BMPs to be used to control sediment resuspension during the capping operation should be identified. In addition, if the monitoring "trigger levels" are exceeded during the capping operation, the additional BMPs to be implemented should be specified.	Specific BMPs for controlling sediment resuspension during capping operations will be identified. The main BMPs for controlling sediment resuspension or turbidity generated from capping materials placement are utilizing appropriate placement techniques (e.g., broadcast spreading) and washing the sand material to remove fines prior to placement.
29	30	Section 7.9 Project and Community Health and Safety	Project and Community Health and Safety	As referenced in Section 7.9, a Community Health and Safety Plan (CHSP) will be developed. An outline of the CHSP was provided in Appendix G. Please note that RM 10.9 sediments have elevated levels of several toxic contaminants; therefore, perimeter air monitoring during dredging activities needs to be performed for key project contaminants 2,3,7,8-TCDD, total PCBs, and Mercury. Also, hydrogen sulfide monitoring is required to address potential odor concerns.	The comment refers to "perimeter air monitoring during dredging activities." Section 7.9 is relevant only to capping. The CPG does not believe that there is a need for air monitoring during capping activities as the underlying sediment are not being disturbed, but are being physically and chemically isolated during cap placement. Potential emissions during dredging do not exceed NJDEP air monitoring thresholds. However, the Community HSP will include air monitoring as a precaution.
30	31a	Section 8.2, page 8-1	Regulatory Guidelines	Since it will be the processed (i.e. stabilized) dredged material (PDM) that will be transported to and disposed of at an out-of-State facility, bench-scale testing of the PDM should be conducted to provide the data needed by the operator of the facility. The owner/operator of this out-of-State facility must certify to the Department that the PDM is physically suitable and environmentally acceptable for disposal at the facility.	The out-of-state disposal facilities have provided the required acceptance criteria for their respective facilities. Once the final disposal facility is selected the requested certification will be provided to the USEPA and the Department.

	31b	Section 8.2, page 8-1	Regulatory Guidelines	In addition, the operator of the out-of-State facility may require periodic testing of the PDM as it is produced for "quality assurance" purposes to verify it is suitable for disposal.	The selected disposal facility will provide the necessary testing required for QA purposes. They are required to have an on-site presence during stabilization activities and to accept the PDM for transportation at that site.
	31c	Section 8.2, page 8-1	Regulatory Guidelines	Similar testing may be required by the operator of the wastewater treatment facility for the barge decant water. Likewise, the owner/operator of the wastewater treatment facility must certify to the Department that the decant water is acceptable for disposal at the facility.	See responses to Comments #31 a and b.
31	32	Section 8.2, Regulatory Guidelines, page 8-2	Sampling locations	For the described bulk sample locations (selected by review of average COPCs concentrations in the top 0 – 3.5 ft of sediment across the mudflat) please identify the selected core locations and sample intervals via the described analysis in this section, and/or reference on a site diagram. If this was already provided, it should be referenced in this section.	The disposal facilities have indicated that in order to accept the sediment on an in-situ basis the project must run TCLP tests on every 1,000 tons of in-situ sediment. Therefore, additional sampling will be conducted in February 2013 to collect these data.
32	34	Table 8-1 Composite Waste Characterization Profile	TABLE 8-1	For waste characterization purposes using TCLP, it is noted that dioxin, a key driver of this removal action, is not included. Presumably, this is because comparable criteria do not exist, and because, for the purposes of this project, the USEPA has determined that Passaic River dioxin-contaminated sediment is not a listed waste under RCRA. However, since dioxin is a key driver for the project, whole sample analysis/reporting for this parameter is considered necessary for waste characterization purposes and should have been performed/presented in this section. Section 8.2, page 8-4 notes that a QAPP addendum is being developed for additional waste profiling. This comment should be addressed in the forthcoming QAPP. It's possible that existing data may be used for this purpose (sediment evaluation described in Section 8.2, page 8-2) if the existing sampling and evaluation approach is acceptable to waste receiving facilities.	The collection and analysis of nearly 100 discrete sediment samples from within the Removal Area (0-2 ft interval) has been deemed sufficient by the potential disposal facilities to characterize dioxin/furan sediment concentrations for purposes of disposal.
33	33	Section 8.3, page 8-4	Transportation Options	Potential impacts of the transport of the processed dredged material to its final disposal location must be minimized through the development and implementation of appropriate BMPs.	Agreed. The design document will be revised to reflect this.
34	—	Appendix B, Sect 7.4 - Analysis of Engineering Cap Thickness	Appendix B	Appendix B should be reviewed by an engineer familiar with subaqueous cap durability; the Site Remediation Program defers to the USACE and USEPA for this aspect of the design. Separately, hydraulic calculations should be provided of the engineered cap with respect to compliance with The Flood Hazard Area (FHA) Control act rules, New Jersey Flood Hazard Area Control Act, N.J.S.A. 58:16A-50 et seq.	Appendix B provides the basis for the statistical analysis of the cap thickness data. Post-placement measurements of the engineered cap will be taken to demonstrate achievement of the applied material specifications. The CPG is discussing with NJDEP about acceptable methods to demonstrate that the proposed cap will not increase flood potential in the area.

Appendix D Comments

35	1	Section 01 45 16, Part 1 – 1.01-B, page 13	Appendix D	This states that both the Contractor and CH2M Hill will implement water quality monitoring programs. The scope of these two programs should be specified and clearly delineated, and how they relate to/are consistent with the surface water quality monitoring program presented in the Pre-Final Design Report explained.	Separate water quality monitoring plans for construction will be developed by the CPG and the Dredging/Capping Contractor. The requested information will be provided in both of these plans.
36	2	Section 01 51 01 – Shoreside Support Facilities, page 41	Appendix D	If this section addresses the use of the construction staging area located in the riverside park, see Pre-Final Design Report Comment #8 – revise this section of Appendix D as needed.	The Bergen County Riverside Park and the Lyndhurst municipal recreation upland areas are no longer being considered for use during the project and the documents will be revised accordingly.
37	3	Section 01 91 14, Part 1 – 1.01, paragraph #3, page 50	Appendix D	The operator of the disposal facility for the PDM may have additional characteristics/requirements that the PDM must meet.	The potential disposal facilities have been contacted and they have indicated that TCLP data collected on the in-situ sediment (1 TCLP test for every 1,000 tons of sediment) are sufficient for acceptance. We have also requested as part of the Request for Proposal that the disposal facilities provide any additional testing requirements. This information will be incorporated into the Final Design as appropriate.
38	4	Section 01 91 14, Part 2 – 2.01, paragraph #2, page 51 and Part 3 – 3.02-E, page 56	Appendix D	The Contractor's mix design, reagents, etc. must also be approved by, and specified in, the AUD issued by the Department for the dredged material processing facility.	Agreed. The documents will be revised accordingly and the NJDEP will be provided the information necessary to issue an AUD.
39	5	Section 01 91 14, Part 2 – 2.01, paragraph #42, page 51 and Part 3 – 3.02-D, page 56	Appendix D	see Comment #3	See response to Comment #3.
40	6	Section 01 91 14, Part 2 – 2.02-A-5-j, page 54	Appendix D	The QAPP should be developed in consultation with the operator of the disposal facility for the PDM and the wastewater treatment facility; also, see Part 3 – 3.02-F, page 56.	Noted
41	7	Section 02 32 00, Part 2 – 2.02-D, page 63	Appendix D	This specifies an 18-inch thick armor layer, not 12-inches (see Pre-Final Design Report Figure 7-2). Clarification/correction needed.	The documents will be revised to be consistent.
42	8	Section 02 32 00, Part 2 – 2.05-A, page 64	Appendix D	This requires chemical testing of the sand to meet USEPA requirements; the Department may also have testing requirements for the sand.	If the Department has testing requirements for the sand which are in addition to those required by the USEPA, then the CPG requests that they be provided at its earliest opportunity, so that CPG can review them and include them in the Final Design documents.
43	9	Section 31 23 24, Part 2 – 2.03, page 80	Appendix D	The barges used to transport the dredged material should have a solid bottom/be sealed (i.e. barges capable of bottom dumping should not be used). Please provide details of the controls that are in place to keep the sediment and water from escaping/discharging from the barge during dredging operation and movement of the barge on the Passaic River.	The specification will be revised to indicate that bottom dumping barges are not used unless they have been certified to be sealed. Prior to mobilization to the site all marine vessels are required to be surveyed in order to confirm they are suitable for use on the project. This includes the barges which will be inspected for water tightness.

44	10	Section 31 23 24, Part 2 – 2.03, page 81	Appendix D	Additional specifications for the installation, operation, monitoring, and removal/movement of the silt curtain should be included; see Pre-Final Design Report Comment #8.	An additional technical specification for silt curtains will be included in the Final Design Report.
45	11	Section 31 23 24, Part 3 – 3.01-B, page 82	Appendix D	Will the park be impacted by any of the needed shoreline vegetation removal operations? If so, restoration should be described.	The Riverside Park properties (County Park and Township Recreation Area) will not be utilized during the project. All work is to be conducted on the water adjacent to the park. The only vegetation removal operations anticipated may be the trimming of tree branches on the water side of the park in order to provide safe access for the dredge bucket. No restoration is anticipated as a result of this action.
Appendix K Comments					
46	—	[General Comments]	Appendix K	<p>The draft Appendix K is incomplete; thus, it is not possible to evaluate the proposed plan. Not all of the referenced figures and appendices are included. In addition, the descriptions of the proposed cap design in Appendix K are different than those in the Pre-Final Design Report (Figure 7-2; for example, see Comment CHECK). The “final” version of Appendix K must be revised to be consistent with the Final (100%) Design Report. Comments are provided below.</p> <p>This document should be additionally based on technical guidance provided in “Contaminated Sediment Remediation Guidance for Hazardous Waste Sites”, USEPA 2005 and any related updates. Chapter 8 is directly applicable and should be used / referenced for this project. Much of the detailed information for this plan has not yet been presented, because Appendices A – D of the LTMM document have not yet been submitted.</p> <p>An important aspect of long term monitoring is the ability to compare post remedial action/construction data to pre –remedial conditions, be it, sediment quality, pore water quality or other measures useful for determining success for the remedial action. This document should therefore more clearly link the TCRA remedial action objectives with both current conditions and specific long term measurement goals to determine success over time.</p> <p><u>Assessment of Cap boundaries</u> - Either in this document or elsewhere in TCRA Design documents, information is needed on how the edges of the engineered cap and armored areas will be protected from severe erosion. This is important because the areas outside of the designated cap area still contain significant sediment contamination at depth that must not become exposed due to nearby, changed physical conditions.</p>	The appendix will be revised to be consistent with the Final Design document.

47	1	Section 1.1, page 1-1	Appendix K	This section states "a small portion along the shore ... cannot be capped ..." The spatial extent of this area should be described and depicted on a site figure. This should include the COPC concentrations in the surface and near surface (.5 – 1.5 ft.) sediment to remain in this uncapped area. Briefly describe, or reference to a later section, how this area, which cannot be capped due to slope instability, will be appropriately addressed. Clarification is needed as to whether this is the area north of STA 31+00 that will be dredged to native material noted in Section 4.2.1, page 4-1 of the Pre-Final Design Report.	The text will be revised to include a discussion of the uncapped area.
48	2	Section 2.1, page 2-1, paragraph #2	Appendix K	This section states the cap armor will consist of stone from 4 to 7 inches in diameter. However, Figure 7-2 in the Pre-Final Design Report shows, and the NJDEP Response to Comment document (response III-18) states, that the stone will be 2 to 4 inches in diameter.	The text will be revised to be consistent with the Final Design Document
49	3	Section 3.1, page 3-1	Appendix K	The remedial objectives of the Removal Action should be stated, with specific monitoring objectives developed to evaluate the success of the Remedial Action in meeting its objectives. The monitoring objectives should be stated in quantitative terms whenever possible.	The text will be revised accordingly.
50	4	Section 3.1.1, Physical Performance Monitoring, page 3-1	Appendix K	In addition to conducting physical performance monitoring for stresses mentioned in this section (high flows, ice scour, etc.), this monitoring should be done to monitor cap thickness and integrity in response to regular tidal cycles overtime.	The physical performance monitoring of the cap will monitor the physical integrity of the cap – especially cap thickness. The cap has been designed to resist stresses associated with 100- year flow events. . Physical stresses associated with regular tidal cycles will have a negligible impact on the cap. Any stresses that may have significant impacts on the cap's physical integrity will be noted as the result of the monitoring program.



51	5	Section 3.1.2, page 3-1	Appendix K	<p>Given the nature of the armor layer (2-4 inch stone) any “pore water” will be more reflective of the overlying water column than of advection/diffusion from the underlying cap and contaminated sediment. In addition, the settlement of (contaminated) suspended solids from the water column on/into the armor layer over time further complicates the chemical monitoring of the armor layer for evidence of satisfactory cap functionality. Also see Comment #... Therefore, it does not appear useful to monitor the “pore water” in the armor layer.</p> <p>However, since chemical monitoring is desired, it is recommended that the cap design be modified to facilitate such monitoring. The existing cap design (see Per-Final Design Report Figure 7-2) is schematically shown in (a) below. To conduct chemical monitoring of the cap, it is recommended that the cap design be modified to something similar to that shown in (b). Chemical monitoring of the cap could be conducted in the upper sand layer in (b).</p> <table><tr><td>(a) Existing</td><td>(b)Recommended</td></tr><tr><td>Armor layer (12 inches)</td><td>Armor layer (10 inches? - physical/erosion monitoring)</td></tr><tr><td>-----geotextile</td><td>----- geotextile</td></tr><tr><td>Active layer</td><td>Sand layer (4 – 6 inches? - chemical monitoring)</td></tr><tr><td>Sand layer (6 inches)</td><td>Active layer</td></tr><tr><td>Sediment</td><td>Sand layer (4 – 6 inches?)</td></tr><tr><td></td><td>Sediment</td></tr></table>	(a) Existing	(b)Recommended	Armor layer (12 inches)	Armor layer (10 inches? - physical/erosion monitoring)	-----geotextile	----- geotextile	Active layer	Sand layer (4 – 6 inches? - chemical monitoring)	Sand layer (6 inches)	Active layer	Sediment	Sand layer (4 – 6 inches?)		Sediment	<p>The cap’s armor layer will contain a graded mixture of sizes. The stone size of 4.5 and 2.0 inches for Armor Stone Type A and B, respectively, is given as the D₅₀. The D₅₀ means 50 percent of the rock is finer by weight than the D₅₀ size. The purpose of the monitoring program is to determine whether there is chemical breakthrough and if the cap is being re-contaminated. The CPG is considering ways to monitor the cap below the armor layer.</p>
(a) Existing	(b)Recommended																		
Armor layer (12 inches)	Armor layer (10 inches? - physical/erosion monitoring)																		
-----geotextile	----- geotextile																		
Active layer	Sand layer (4 – 6 inches? - chemical monitoring)																		
Sand layer (6 inches)	Active layer																		
Sediment	Sand layer (4 – 6 inches?)																		
	Sediment																		

52	6	Sections 3.2 and 3.2.1, page 3-1	Appendix K	<p>Given the RM 10.9 physical conditions, routine physical monitoring should be performed annually at a minimum, not once every 5 years as currently proposed. If event –driven monitoring occurs within a similar time period (within 2 months) as the scheduled, designated routine monitoring timeframe, the latter could be replaced by the event driven monitoring. It is recommended that monitoring be conducted on the following schedule:</p> <ul style="list-style-type: none"> – Routine Physical Monitoring: This should be performed once per year (in late spring) for the first 5 years after project implementation; then once every 3-5 years (depending on the results of the first 5 years of monitoring); – Routine Chemical Monitoring: This should be performed within 1 year of installation and thereafter every 5 years up to 30 years, not at just the 5, 30 and 100 year post -construction marks. At the 30 year mark, a new monitoring schedule may be developed based on environmental condition of the capped area and evaluation of monitoring program to date. This should include consideration of any new/improved cap monitoring methods. – Event-based Monitoring: The triggers for this monitoring need to be specified. If this monitoring indicates that cap functionality has been potentially compromised, the schedules for the Routine Physical and Chemical Monitoring should be “reset”. 	<p>The cap is designed to resist at least the forces of a 100-year flood. Given the relatively unremarkable physical conditions at RM 10.9, routine monitoring that begins one year after cap construction in combination with event-based monitoring is a responsible, conservative monitoring program.</p> <p>The cap is designed to prevent chemical breakthrough indefinitely (i.e., several hundreds of years). In the context of this extremely long period of time, beginning the chemical monitoring within the first year of installation and every 5 years for the first 30 years does not seem justified.</p> <p>The triggers for the event-based monitoring are the flood flows given in Table 3-1.</p>
53	7a	Section 3.2.2- Event-Based Monitoring	Appendix K	The triggers need to be specified for the Event-based Monitoring; i.e. what is the “designated river flow event” that will trigger this monitoring – the 5-year recurrence flow listed in Table 3-1? The 10-year flow? What type of river construction activities will trigger this monitoring?	The triggers for the event-based monitoring are the flood flows given in Table 3-1. Construction events that would trigger additional event-based monitoring include utility construction that physically disrupts the cap.
	7b	Section 3.2.2- Event-Based Monitoring	Appendix K	This section should describe the monitoring techniques to be used (only bathymetry survey mentioned).	Section 4 discusses bathymetric surveys and other techniques such as poling and probing.
	7c	Section 3.2.2- Event-Based Monitoring	Appendix K	As proposed, event- based monitoring will be performed within “6 months” following the observed event. This is not acceptable. Such monitoring should be performed within 1 – 2 months of designated events, using pre-approved monitoring and reporting techniques.	The text will be revised as suggested.
	7d	Section 3.2.2- Event-Based Monitoring	Appendix K	Bathymetry surveys will be performed for each event designated per Table 3-1 (5, 10, 25, 50 and 100 yr flow return events) and “additional” cap integrity monitoring is slated to occur only following 100 year flood events. Given RM 10.9 conditions, these “additional” monitoring methods need to be described and should be implemented for event -based flows of 10, 25 and 50 year return events that occur within the first 30 years of monitoring. This will develop a cap integrity track record in relation to these possibly more frequent, but less severe flow events.	The “additional” monitoring events are those associated with each additional 100-year flood or greater events. There are no additional monitoring methods.

	7e	Section 3.2.2- Event-Based Monitoring	Appendix K	This section further states that due to concerns with cap consolidation and possible mis-interpretation as erosion, the “underlying source of the elevation change (.....) must be determined prior to initiating additional monitoring”. However, it may not be possible to differentiate between these two “sources” until additional monitoring is performed. Since use of bathymetry alone to monitor cap functionality may not be completely reliable, other measurement lines of evidence need to be used/described in this report. In addition, whenever a pre-designated sediment bed elevation change is noted (regardless of reason), a minimum set of pre-designated monitoring techniques should be performed with the primary purpose of determining cap integrity relative to capping goals of contaminant containment and separation from the rest of the river.	Agreed. The text will be revised appropriately
54	8	Section 3.3, page 3-1	Appendix K	This draft version of Appendix K does not include the referenced Appendices A-C. Therefore, it is not possible to review the proposed Data Quality Objectives (DQOs) for the monitoring program. However, irrespective of the information provided in these appendices, the DQOs for the monitoring program should be stated in this section of the document.	Agreed. The text will be revised appropriately.
55	9	Section 4.1, page 3-1	Appendix K	This section indicates that the cap will consolidate at least 9 inches in depth – this is almost 40% of the original 24-inch cap thickness. Since it could be expected that there will be minimal consolidation of the armor and active layers, and the sand layer is only 6 inches thick, this implies that most of this consolidation will be the result of compacting the underlying contaminated sediment; this could result in slope instabilities and/or the enhanced advection/diffusion of groundwater into the cap. Also, this large change in depth (relative to the cap thickness) suggests that bathymetric surveys will be of limited use in evaluating the stability and functionality of the cap.	The estimate in the text is incorrect and based upon an earlier cap design. The text will be revised to read “...will consolidate at least 4 inches in depth...” Virtually all of the consolidation will occur in the underlying sediment. Bathymetric surveys have proven to be effective in evaluating the physical integrity of the cap even where the total consolidation has been on the order of 9 to 12 inches.
56	10	Section 4.2, page 4-1	Appendix K	Monitoring of the armor layer should focus on evaluating the thickness of the cap, using visual means and physical probing measurements. As noted above, use of bathymetric data to monitor the cap is problematical. Poling should be conducted to penetrate through the armor layer to the underlying geotextile, thus determining the thickness of the armor layer	As noted above, bathymetric surveys have proven to be effective in evaluating the physical integrity of caps at other sites. Poling through the armor layer has been unsuccessful at other sites (e.g. Lower Fox River).
57	11a	Section 5, Chemical Performance Monitoring, page 5-1	Appendix K	This section provides an overview of proposed pore water collection and analysis to determine cap effectiveness (see comment ... above).	Comment Noted.

	11b	Section 5, Chemical Performance Monitoring, page 5-1	Appendix K	Missing is the important link/comparison to pre-remedial conditions, such as the pore water data to be collected per Pre-Final Design Addendum D. This link needs to be incorporated through program objectives and related sampling, analytical and evaluation methods.	Pre-remediation pore water concentrations are being used to design the active layer of sediment cap, but will not be directly employed for comparative purposes during the long term monitoring. Rather, pore water concentrations above the active layer of the sediment cap will be monitored for chemical breakthrough as part of the long term monitoring program. The elevated pre-remediation pore water concentrations are not relevant to the long term monitoring as lower concentrations, such as surface water concentrations, provide a more conservative criterion to establish chemical breakthrough.
	11c	Section 5, Chemical Performance Monitoring, page 5-1	Appendix K	In the current plan, Phenanthrene and mercury are the analytes chosen for this purpose. However, for initial monitoring, and for comparison to pre-remedial conditions, collection and analysis of samples for 2,3,7,8-TCDD and total PCBs is also recommended. If Phenanthrene is found to be a reliable indicator parameter for 2,3,7,8-TCDD and total PCBs, consideration can be given to dropping these contaminants in future long term monitoring.	Pore water concentrations above the active layer of the sediment cap will be monitored for chemical breakthrough as part of the long term monitoring program. For this reason, strongly sorbing organic constituents such as 2,3,7,8-TCDD and PCBs are not ideal candidates for breakthrough monitoring. Phenanthrene is much more mobile than these two constituents and therefore was selected for the long term monitoring of transport through the cap.
58	12	Section 5.1, page 5-1	Appendix K	The concentrations of phenanthrene and mercury in the contaminated sediment underlying the cap should be compared to that in current surface water quality (needs to be determined) and nearby surface sediment of the Passaic River. In order to use these contaminants as indicators of cap functionality, their concentrations must be greater than those in the ambient environment. Additional information should be provided on how well the solubility of phenanthrene compares to that of the lower molecular weight PCBs (unless these are not prevalent in the TCRA).	Agreed. The concentrations of phenanthrene and mercury in the pore water underlying the cap should be compared to that in the surface water to ensure the pore water concentrations are greater for purposes of long term monitoring. The sediment concentrations have already been established as being elevated with respect to areas outside the Removal Area. A review of the data will be undertaken to compare the solubility of phenanthrene to any prevalent lower molecular weight PCB congeners in the Removal Area.
59	13	Section 5.2, page 5-1	Appendix K	Please describe how the length of time needed for the SPMEs and peepers to reach equilibrium with the surrounding pore water will be determined. Removal of the armor layer to install these devices will significantly disrupt any "pore water" present, probably rendering the data collected of limited applicability for its intended use.	The CPG will continue to develop an SOP for the installation and equilibration of these samplers to ensure data of sufficient quality are obtained.
60	14	Section 6.1, Cap Maintenance Trigger, page 6-1	Appendix K	The risk based levels to be used for determining chemical breakthrough need to be presented with appropriate rationale and/or technical reference. The current proposal of physical trigger is given as "5 percent of the total cap area eroded at least 50 percent through the armor layer". Other scenarios should be considered, along with use of professional judgment, to be more proactive, rather than only initiating cap maintenance under 1 set of physical change conditions. This section therefore be expanded; a detailed cap maintenance decision-tree should be developed with a series of potential trigger criteria and response actions identified.	The objective of this removal action is "to reduce exposure of receptors to, and prevent potentially significant migration of contaminants from [the removal area]". The proposed plan will ensure that the risk of direct exposure is maintained and that COPCs beneath the cap are controlled from entering the bioactive zone of the cap following completion of the dredging/capping works.



61	15	Section 6.2, page 6-1, Bullet #3	Appendix K	Please describe the kind of institutional controls that could be implemented.	The final design documents will be revised to identify the institutional controls that might be implemented to address specific situations. An example institutional control would be prohibiting the construction of in-water structures near the cap
62	16	Section 6.2, page 6-1, Bullet #5	Appendix K	Increasing monitoring is not an appropriate “maintenance” reaction to a cap maintenance trigger. However, if the need to perform cap maintenance is identified, Event-based Monitoring should be implemented.	“Increasing monitoring” is an appropriate operational response action to one set of triggers. Maintenance will occur when monitoring indicates it is needed.